

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-8, 10-13, 16, and 18-21 are currently pending, Claims 3, 4, 6, and 7 having been previously withdrawn from consideration. No claim amendments are presented, thus, no new matter is added.

In the outstanding Office Action, Claims 1, 2, and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamada et al. (JP 63-037621, hereafter “Yamada”) in view of Watt et al. (WO 90/20517, hereafter “Watt”); Claim 8 was rejected under 35 U.S.C. §103(a) as being unpatentable over Yamada in view of Watt and Armistead (U.S. Patent No. 5,838,759); Claims 10, 12-13, 16, 18, 20, and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamada in view of Watt, Armistead and Cluzeau (French Patent Application FR 2 738 669); Claims 11 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Yamada in view of Watt, Armistead, Cluzeau, and Kassing (German Patent Application DE 3049153 A1).

As an initial matter, it is noted that MPEP §706.02 II is relevant to rejections based on English Abstracts and/or the underlying foreign language document. This MPEP section makes it clear that if the examiner is relying on both the English Abstract and the underlying Japanese document Yamada (JP 63-0376219), a translation of this document is to be obtained and supplied prior to implementing a final Office Action. As the present Action includes no translation of Yamada, the outstanding Office Action must be relying on the English Abstract alone. However, MPEP §707.02 II makes it clear that such reliance is “inappropriate where both the abstract and the underlying document are prior art.”

Accordingly, it is respectfully submitted that the present Action that must be relying only on the Yamada English Abstract is inappropriate **and the finality of the Office Action**

**should be withdrawn.** Furthermore, to the extent that any subsequent Action relies on Yamada, a copy of the full translation should be supplied as required under MPEP §706.02 II.

With respect to the rejection of Claim 1 under 35 U.S.C. §103(a), Applicant respectfully traverses this ground of rejection. Claim 1 recites, *inter alia*,

neutron emissive parts and neutron non-emissive parts which are juxtaposed, only the neutron emissive parts containing anthropogenic tritium emitting neutrons during the bombardment with particles, said emissive and non-emissive parts being arranged so as to form a non-uniform pattern as a coded mask such that said target emits a neutron flow including plural neutron beams coded by the pattern of the mask.

Figs. 1a-1c of Yamada illustrate a method of making an X-ray mask. Fig. 1a shows a boron nitride carbide hydride film 5 being used, which the Office Action interprets as corresponding to the claimed “neutron emissive parts.” (See Office Action, at page 2). The abstract of Yamada also describes an X-ray absorber which is formed through a plating base 4, which the examiner interprets as corresponding to the claimed “non-emissive parts”.

Applicant notes that Fig. 1d of Yamada shows the X-ray mask in its finished form, where transmitting membrane 3 is locally exposed through openings in a gold layer 8. However, Fig. 1d does not show the boron nitride carbide hydride film 5, which was removed in the process of making the X-ray mask. Also, the remaining portions of plating base 4 are masked by the gold layer 8. This is clearly described in the last sentence of the abstract of Yamada, which states that “[t]he boron nitride carbide hydride film 5 is patterned to shape a plating stencil 5’, an X-ray absorber is formed through the plating of gold, using the plating stencil 5’ as a mask, and **the stencil 5’ and the plating base 4 are removed.**” (Emphasis added).

Thus, Fig. 1b shows that the boron nitride carbide hydride film 5 has been patterned into a stencil 5’. Fig. 1c shows that a gold layer 8 fills in the areas around the mask 5’.

Finally, Fig. 1d shows that the stencil 5', and thus all of the remaining boron nitride carbide hydride film 5, is completely removed. Additionally, all the remaining portions of plating base 4 are masked underneath the gold layer 8.

Therefore, the actual X-ray mask of Yamada does not have the boron nitride carbide hydride film 5, and thus does not have the "neutron emissive parts" interpreted by the examiner. Furthermore, the plating base 4 in the X-ray mask is masked by the gold layer 8, and thus cannot be the "neutron non-emissive parts," as defined by Claim 1.

Therefore, Applicant respectfully submits that Yamada fails to disclose or suggest "*neutron emissive parts and neutron non-emissive parts* which are juxtaposed, only the neutron emissive parts containing anthropogenic tritium emitting neutrons during the bombardment with particles, *said emissive and non-emissive parts being arranged so as to form a non-uniform pattern as a coded mask* such that said target emits a neutron flow including plural neutron beams coded by the pattern of the mask," as defined by Claim 1.

Applicants further note that the Office Action acknowledges that Yamada fails to disclose or suggest neutron emissive parts that contain anthropogenic tritium, as defined in Claim 1. The Office Action relies on Watt to remedy this deficiency of Yamada with regard to Claim 1 (see Office Action, at pages 3-4).

Watt describes the use of a high energy light ions beam for exposing and patterning a resist layer 1 (see page 5, and Fig. 1a). Figs. 3a and 3d of Watt show an embodiment having a metal layer 4 under the resist layer 1. Watt describes that the patterned areas of the resist layer 1 are developed and voids are created in the resist layer. Metal is electroplated to fill the void, and with an appropriate energy, the ions can penetrate into the metal layer 4 (see page 7, last paragraph).

The Office Action takes the position that "[i]t would have been obvious to include the teaching of Watt et al of the method of better defining the geometrically complicated and

small areas in which a different material needs to be deposited also in the invention by Yamada et al because both Watt et al and Yamada et al are concerned with improving the accuracy with which the complicated pattern can be defined.” (See Office Action, at page 4).

Thus, it appears that the Office Action is suggesting that using the tritium ions beam described in Watt, to perform the etching process in Yamada will achieve the feature of “the neutron emissive parts containing anthropogenic tritium,” as defined by Claim 1.

However, Applicant submits that if the tritium ions beam of Watt is scanned in a predetermined pattern across the surface of the resist 7 of Fig. 1a of Yamada, the tritium ions would penetrate into the SOG layer 6 and the boron nitride carbide hydride layer 5 and the plating stencil 5' would be obtained (such as Fig. 1b of Yamada). The plating stencil 5' would have voids corresponding to the exposed patterns as shown in Fig. 1b. With a sufficient energy, the tritium ions may penetrate into the plating base 4, and eventually reach the membrane 3. However, the next step of Yamada is to fill the voids of the plating stencil 5' with gold as shown in Fig. 1c. Then, in Yamada, the plating stencil 5' and the underlying plating base 4 is removed (see Fig. 1d of Yamada).

Thus, in the final target of Yamada combined with Watt, areas of the membrane 3 are exposed. Even if these exposed areas of membrane 3 are considered “neutron emissive parts,” these exposed areas cannot contain anthropogenic tritium because they were not exposed to the tritium ions beam (they are hidden by the plating stencil 5'). Only the voids of the plating stencil 5' (which are eventually covered with gold) would be exposed to the ions beam. Thus, Applicant submits that even if the exposed areas of the membrane 3 shown in Fig. 1d of Yamada are considered the “neutron emissive parts” of Yamada's X-ray mask, then they do not contain anthropogenic tritium.

Furthermore, the Office Action had taken the position that the boron nitride carbide hydride film 5 of Yamada corresponds to the “neutron emissive parts.” However, this is the

same material that would be etched away by the tritium ions beam of Watt. Therefore, the combination of Yamada and Watt would actually eliminate the “neutron emissive parts” of Yamada as interpreted by the examiner. Therefore, the examiner still has not shown that the combination of Yamada and Watt would result in a target which has the boron nitride carbide hydride film 5 containing anthropogenic tritium.

Thus, Applicants submit that even if a person of ordinary skill in the art uses the tritium ions beam of Watt in the process of Yamada, the claimed target of Claim 1 cannot be achieved.

Thus, Watt fails to remedy the deficiencies of Yamada with regard to Claim 1. Therefore, Applicant submits that Claim 1 (and all associated dependent claims) patentably distinguishes over Yamada and Watt, either alone or in proper combination.

Armistead, Cluzeau, and Kassing have been considered but fail to remedy the deficiencies of Yamada and Watt with regard to Claim 1.

Thus, it is respectfully submitted that Claim 1 (and all associated dependent claims) patentably distinguish over Yamada, Watt, Armistead, Cluzeau, and Kassing, either alone or in proper combination.

Consequently, in light of the above discussion, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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